NOT MEASUREMENT SENSITIVE

MIL-STD-40051-1

DEPARTMENT OF DEFENSE STANDARD PRACTICE

TECHNICAL MANUALS

GENERAL PREPARATION AND ASSEMBLY INFORMATION

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1. **SCOPE.**

1.1 Scope. This standard establishes the requirements for the preparation of front matter, rear matter and mandatory style and format requirements for all technical manuals (TMs) covering operation and maintenance, at all levels through depot maintenance. The requirements are applicable for both paper and digital page-oriented TMs. In addition, this standard provides instructions for assembling individual information work packages into complete TMs. Electronic delivery of TMs is accomplished through the use of the Assembly Document Type Definition (DTD). The DTD is available in a digital format. Refer to MIL-STD-40051 for information on obtaining this DTD. The style and format requirements provided in this standard shall be used for text and graphics development for all TMs.

2. **APPLICABLE DOCUMENTS.**

The applicable documents in section 2 of MIL-STD-40051 apply to this Part.

3. **DEFINITIONS.**

The definitions in section 3 of MIL-STD-40051 apply to this Part.

4. **GENERAL REQUIREMENTS.**

4.1 General. The general information, style and format requirements and TM assembly instructions provided in this standard supplement the technical content requirements in the other parts of this 8-part standard. It contains general technical content information, mandatory style and format requirements, and TM assembly instructions for the preparation and delivery of all TMs and revisions covering operation and maintenance, at all levels through depot.

4.2 Types of technical manuals. Appendix A, Technical Manual Content Selection Matrixes, of MIL-STD-40051 lists specific technical content requirements for each type of maintenance manual, including multilevel TMs, covered by this standard. Each type of TM shall provide in detail the maintenance coverage prescribed for the applicable maintenance level(s) by the Maintenance Allocation Chart (MAC) and SMR-coded items.

4.3 Work package development. TM data developed in accordance with this standard shall be divided into individual, stand alone units of information work packages. A work package shall be task oriented and fully consistent with the maintenance concept as detailed by the MAC. Work packages shall contain descriptive, operational, maintenance, troubleshooting, support, or parts information for the weapon system or equipment.

4.4 Selective application and tailoring. MIL-STD-40051 contains some requirements that may not be applicable to the preparation of all technical manuals. Selective application and tailoring of requirements contained in MIL-STD-40051 are the responsibility of the contracting activity and shall be accomplished through the use of Appendix A, Technical Manual Content Selection Matrixes, of MIL-STD-40051. The applicability of some requirements is also designated by one of the following statements: unless specified otherwise by the contracting activity; as/when specified by the contracting activity; or when specified by the procuring activity.

4.5 Style and format. Style and format contained in this standard are considered mandatory and are intended for compliance. The examples provided at the rear of this Part are an accurate interpretation of the mandatory style and format requirements contained herein and shall be followed to ensure that the

conforming Document Type Definitions (DTDs) can be used to develop digital data in accordance with MIL-PRF-28001.

4.5.1 Non-mandatory style and format requirements. Preferred general style and format requirements for the preparation of Army TMs shall be provided by the procuring activity.

4.6 Standard tables. Various standard tables required are noted throughout the text of this standard in bold and in parentheses (i.e., **(standard table)**). The formats and table heading names of these standard tables shall have no deviations. A list of standard tables is provided in 5.3.11.3.

4.7 Preparation of digital data for electronic delivery. Technical manual data prepared in work package format and delivered digitally in accordance with this standard shall be Standard Generalized Markup Language (SGML)tagged and assembled using the modular Assembly DTD and Formatting Output Specification Instance (FOSI). The DTD and FOSI have been developed in accordance with MIL-PRF-28001 and ISO 8879. Refer to MIL-STD-40051 for information on obtaining or accessing the modular DTD and FOSI. SGML tags used in the modular DTD are noted throughout the text of this standard in bracketed, bold characters (i.e., **<maintwp>**) as a convenience for the TM author and to ensure that the tags are used correctly when developing a document instance.

4.7.1 Use of the DTDs / FOSIs. The modular DTDs referenced in this standard interpret the technical content and structure for the functional requirements contained in this standard and are mandatory for use. The modular FOSIs referenced herein interpret the style and format. As specified by the contracting activity, FOSIs or style sheets may be used to produce final reproducible paper copy for all TMs prepared in accordance with this standard.

5. **DETAILED REQUIREMENTS.**

5.1 Technical content preparation. Technical manual data developed in accordance with this standard shall be task oriented and fully consistent with the maintenance concepts derived from the baseline documents described below.

a. Logistic Support Analysis Record (LSAR). The technical data and instructions developed by the requirements of Logistics Support Analysis and Department of Defense (DoD) Requirements for a Logistic Support Analysis Record (LSAR), (including the maintenance allocation chart (MAC)) shall be used as the baseline to prepare TMs.

b. MAC. For equipment that does not have LSAR data available, either a Preliminary Maintenance Allocation Chart (PMAC) or the MAC shall be used as the baseline to prepare TMs.

c. TB 750-93-1. If a waiver of standard requirements is granted by the contracting activity, TB 750-93-1 may be used as the baseline for preparing TMs.

d. Additional source data. Available engineering drawings shall be used with the other required data. Sound engineering principles and techniques, available engineering analyses, service experience, performance data on the item and on similar items, and all other Reliability, Availability, and Maintainability (RAM) data available shall be used in the preparation of specific instructions.

5.2 TM organization. TMs prepared in accordance with this standard shall describe in accurate and appropriate detail the unit, direct support, intermediate (aviation), general support, and depot maintenance authorized by the MAC. The operator and maintenance procedures shall be organized in MAC Functional

Group Code (FGC) order. The TM shall be organized in accordance with the applicable technical manual content selection matrix, provided in Appendix A of MIL-STD-40051.

5.2.1 TM divisions. TMs shall be divided into volumes, chapters, work packages (WPs), paragraphs, subparagraphs, and steps.

5.2.1.1 Volume size and content.

a. Division into volumes shall occur when the number of printed pages (excluding pocket TMs) exceeds 1,500 pages or 750 sheets. Each volume shall not exceed 1,500 pages or 750 sheets. A pocket TM (4 by 5-1/2 by 4 inches) or a pocket TM volume shall not exceed 200 pages or 100 sheets.

b. There shall be no page limitations for TMs prepared solely for digital display.

c. Each volume of a series shall display the TM number on its cover. Each volume of a series shall contain a title block page and table of contents.

d. Separate volumes shall not be used to distinguish between models of equipment (e.g., -10 for basic model, -10-1 for model A, -10-2 for model B, etc.).

5.2.1.2 Chapters. Chapters shall be used to divide TM data into specific functional information. Chapter types include General Information, Operating Instructions, Maintenance Information, Troubleshooting Information, Parts Information and Supporting Information. Each chapter shall be made up of one or more work packages.

5.2.1.3 Work packages. Work packages shall be used to logically divide TM data into functional task-oriented information. Work packages shall begin on a right-hand page.

5.2.1.3.1 Work package content. Work packages may contain a scope of tasks, initial setups, descriptive information, operating tasks, and maintenance tasks. These data types can be further divided into paragraphs, procedural steps, tables, lists, warnings, cautions and notes, and supporting illustrations. Refer to MIL-STD-40051-2 through MIL-STD-40051-7 for the specific content requirements for each of the functional work package types (i.e., description information, operator's instructions, maintenance, troubleshooting, repair parts, and supporting information).

5.3 Style and format. Style and format requirements provided in 5.3.1 through 5.7.5 are considered mandatory and shall be used in the preparation of all TMs. Additional preferred, non-mandatory style and format requirements shall be provided by the procuring activity.

5.3.1 Type size and style. Type style, size, and spacing shall be in accordance with best commercial practices for technical publications. Type shall be proportionally spaced (non mono spaced). Fonts shall be selected for a balance between readability and economy of space. Setting text in all capital letters shall be limited to appropriate uses, such as major headings, acronyms, equipment markings, and other instances as indicated in the samples provided at the rear of this Part.

5.3.2 Page size and orientation. The TM shall be prepared in a size selected from table 1 and specified by the contracting activity. Placement of margins, headers, and footers shall be in accordance with best commercial practices. Orientation of pages, either vertical (portrait) or horizontal (landscape), shall be consistent throughout a given manual for ease of use. The growing prevalence of TMs used in electronic display mode (instead of paper) makes this consistency extremely important. Exceptions may be made only

if essential for proper grouping of information for the user's benefit. Otherwise, information shall be formatted or reformatted so that all pages have the same orientation.

TABLE I. Manual styles and trim sizes.

Style	Trim Size	Orientation
Pocket	4 x 5.5 5.5 x 4	Vertical Horizontal
Logbook	6.5 x 9.5 9.5 x 6.5	Vertical Horizontal
Standard	8.5 x 11 11 x 8.5	Vertical Horizontal
Double Standard	17 x 11	Horizontal

5.3.3 Foldout pages.

a. Foldout pages, if needed, shall be the same height as regular pages in the manual, and shall be folded 2, 4, or 6 times, depending on the width necessary. Each foldout shall have a blank apron wide enough for the user to look at the data while reading text elsewhere in the TM. Foldouts shall not be used in repair parts and special tools lists (RPSTL) or operator-only TMs.

b. Work packages shall not contain foldouts. Foldout pages shall follow the last work package, the glossary, or the alphabetical index, whichever forms the last portion of the TM or volume.

5.3.4 Final reproducible copy (FRC). FRC shall be a direct output of the contractor's digital TM files. The master copy of any TM is a set of digital files, not the hard-copy results. There are no peculiar layout requirements for FRC distinct from those for nonfinal drafts or proofs. The only special criterion for FRC is reproducibility: Its resolution and contrast must be sufficient for creation of offset plates or raster page images without loss of detail that would be noticeable to users.

5.3.5 Warnings, cautions, and notes.

5.3.5.1 Use and placement.

a. A warning shall precede the text of any procedure involving a clear danger to the person doing that procedure. A caution shall precede the text of any procedure involving a clear risk of damage to the equipment. A note, used to highlight essential procedures, conditions, or statements may either precede or follow the text. If multiple warnings, cautions, or notes apply to the same text, the warnings shall appear first, cautions second, notes last.

b. The header **WARNING**, **CAUTION**, or **NOTE** shall be bold and centered above the appropriate text. Headers shall not be numbered. When a warning, caution, or note consists of two or more paragraphs, the header **WARNING**, **CAUTION**, or **NOTE** shall not be repeated above each paragraph. W/C/N on unrelated topics may not be contained under one heading.

c. All lines of warnings, cautions, and notes shall be indented five spaces or characters from both left and right margins.

d. Layout shall not result in warnings, cautions, and notes divided so first lines or groups of icons appear on one page and remaining lines or groups of icons on another.

e. Layout shall not result in warnings, cautions, and notes on a different page than the paragraph they apply to.

5.3.5.2 Icons. Use of standardized icons to improve readers' recognition of hazards is encouraged. Warning icons used shall be defined in the warning summary, and no icon shall be used without prior approval of the procuring activity.

5.3.5.3 Hazardous materials warnings and icons. Hazardous materials warnings may be presented in the standard warnings format (5.3.5.1), as an icon, or a combination of icons. Hazards that result from a combination of materials shall clearly indicate that mixing or combining the materials creates the hazard.

5.3.5.3.1 Format for hazardous materials warnings and icons. Hazardous materials warnings with icons shall consist of the icons and the nomenclature of the hazardous material. They shall immediately precede the text to which they apply. The header **WARNING** shall not be required.

5.3.5.3.2 Health hazards. Warnings shall be used when exposure to hazardous chemicals, adverse health factors, or use of the equipment cannot be eliminated.

5.3.6 Chapters.

5.3.6.1 Chapter title page **<titlpg>**. Each chapter shall begin with a chapter title page. See figure 1 for the contents of a chapter title page. A chapter title page shall always be a right-hand page.

5.3.6.2 Chapter numbering. Chapters shall be numbered in sequential order throughout the TM using Arabic numerals. Chapters shall not be renumbered in separate volumes.

5.3.7 Work packages.

5.3.7.1 Work package titles.

a. Work packages shall have titles. The title shall describe the subject or task.

b. Titles shall stand-alone (i.e., are not run-in with text) and shall begin at the left margin. (Refer to figure 2).

c. Titles shall be in capital letters and boldface type. A horizontal line shall be placed above and below the work package title to separate it from the body of the technical information.

d. When work packages are continued on subsequent pages, the work package title shall be continued at the top of those pages (for example, **FUEL PUMP MAINTENANCE - Continued**).

e. When TMs are acquired and specified by the Army for joint use with another or other Services (Joint Service TMs), work packages in joint publications which do not apply to all Services concerned shall

be marked to indicate the Services to which they apply (for example, **LANDING GEAR MAINTENANCE (ARMY ONLY)**).

f. Work packages shall not contain foldouts. Foldout pages shall follow the last work package, the glossary, or the alphabetical index, whichever forms the last portion of the manual or volume. (Refer to 5.8.2.3.)

5.3.7.2 Work package sequential numbering. To maintain a sequential order in the TM and to facilitate referencing, each work package (WP) shall be assigned a six digit number beginning with the number 0001 00. There shall be one blank space between the forth and fifth numerals. The work package sequence numbers shall run consecutively throughout the TM. For example, the first work package in Chapter 2 will be assigned the number immediately following the last work package number in Chapter 1 (e.g., if 0010 00 is the last WP in Chapter 1, 0011 00 will be the first work package in Chapter 2). WP sequence numbers shall be assigned in numerical sequence, initially by the first four digits, then by the last two digits. (Refer to figure 2).

5.3.7.2.1 Assignment of the last two digits of the work package sequence number. The last two digits of the WP sequence number shall be reserved to permit unlimited expansion of the TM to incorporate new configuration data without affecting the WP sequence numbers already assigned. The last two digits of a WP sequence number may be assigned for the following reasons.

a. To permit adding one or more WPs between any two existing WPs during any revision cycle. The placement within the TM shall depend on the technical content task arrangement and its relationship to the existing WP and the WP(s) to be added.

b. To insert new WPs between two WPs already assigned WP sequence numbers so as not to cause renumbering just prior to producing the basic manual.

During any revision cycle, the first WP sequence number to be assigned after an existing basic WP sequence number shall be identified as "01"; for example, "0029 00" shall be followed by "0029 01". Subsequent WP sequence numbers to be assigned after "01" shall be "02" through "99"; for example, "0029 02" through "0029 99".

5.3.7.2.2 Assignment of work package sequence numbers in volumized TMs. When a TM is divided into two or more volumes, the WP sequence number shall continue in sequence. The first volume shall contain as many WPs as necessary beginning with 0001 00. The work packages contained in the second and subsequent volumes shall be numbered consecutively beginning with the number immediately following the last work package sequence number in the preceding volume.

5.3.7.3 Work package page numbering. Each work package shall be page numbered consecutively using the six digit work package sequence number followed by -1, -2, -3, etc. (e.g., 0001 00-1, 0001 00-2, etc.). Page numbers shall be centered at the bottom of the page. Even - numbers shall be assigned to the left-hand pages and odd - numbers to right-hand pages. (Refer to figure 2).

5.3.7.4 Work package identification number. For data base retrieval purposes, a unique number shall be assigned to each work package. This WP identification number will not appear on the printed or screen display page and should not be confused with the WP sequence number in 5.3.7.2. It shall be assigned when preparing the document instance in accordance with the modular DTDs and shall not be changed throughout the life of the WP. The WP identification number shall consist of an alpha designation for the type of

information contained in the work package, a five digit block number assigned by the procuring activity, and the TM number less the maintenance level dash numbers.

a. The following alpha designators shall be assigned to the specific types of information contained within the work packages.

G - Introductory information with theory of operation

I - Inspection

O - Operator instructions

T - Troubleshooting procedures

M - Maintenance instructions

R - Repair Parts and Special Tools List (RPSTL)

S - Supporting Information

b. Examples of work package data base identification numbering are shown below.

M00432-9-1425-646

M	Identifies a WP containing maintenance instructions.
00432	Identifies the 432nd work package containing specific maintenance instructions for the M270 Armored Vehicle Mounted Rocket Launcher.
9-1425-646	Identifies the M270 Armored Vehicle Mounted Rocket Launcher TM.

T02000-1-1520-238

T	Identifies a WP containing troubleshooting procedures.
02000	Identifies the 2000th work package containing specific troubleshooting procedures for the AH-64A Helicopter.
1-1520-238	Identifies the AH-64A Helicopter.

5.3.8 Maintenance tasks and descriptive information. Procedural maintenance tasks or descriptive information contained in a WP shall have a paragraph title. When it is necessary to divide a maintenance task into subtasks, for clarity, subparagraph titles may be used. Refer to paragraph 5.3.9.2. The words "END OF TASK" shall be placed below the last data item (i.e., text, illustration, etc.) in any WP containing procedural maintenance tasks. Refer to figure 2.

5.3.9 Paragraphs.

5.3.9.1 Paragraph numbering. Paragraphs and subparagraphs within a WP shall be unnumbered.

5.3.9.2 Paragraphs and subparagraph titles. Paragraphs and subparagraphs within a work package may have titles. If titled, the title shall begin at the left margin. A first level paragraph title shall be in all capital letters. Lower level paragraph titles shall have the first letter of the first word and of each principle word capitalized. When titled paragraphs are continued on subsequent pages, the first level paragraph title shall be placed at the top of those pages (e.g., REMOVAL - Continued). All titles shall be in boldface type. Paragraph text shall begin flush left and stand alone. Refer to figure 2.

5.3.10 Procedural steps. Procedural steps shall be used to present detailed step-by-step instructions for performing an operational or maintenance task. Procedural steps may be further divided into substeps and subordinate substeps.

5.3.10.1 Procedural step numbering.

a. Procedural steps shall be numbered consecutively with Arabic numerals.

b. If different levels of substeps and subordinate substeps are required to enhance clarity, these substeps shall also be numbered. Each level of substep numbering used shall be different. Once a numbering sequence is established, it shall remain consistent throughout the TM. (Refer to figure 2).

c. Procedural steps and substeps shall not be allowed beyond the fifth level of subordinate substeps.

5.3.10.2 Procedural step titles. Procedural steps may have paragraph or subparagraph titles. Procedural substeps and subordinate substeps shall have no titles. Refer to paragraph 5.3.9.2.

5.3.10.3 Procedural step text. Procedural step text, including the title if required, shall begin two line spaces below the preceding text and be flush left. Substeps shall be indented to enhance clarity.

5.3.11 Tables and lists.

5.3.11.1 Table numbering. Tables shall be numbered consecutively within each work package in the order of their reference. The table numbers shall begin with the Arabic numeral 1.

5.3.11.2 Table titles.

a. Each table shall have a title describing the content or purpose of the table. The table number and title shall be repeated when a table continues on subsequent pages.

b. The table title shall consist of the word "TABLE" followed by the table number, and the table title. Table titles shall be located above the table.

5.3.11.3 Table format. Tables in MIL-STD-40051-1 through MIL-STD-40051-7 are in either a standard or non-standard format. Tables designated as standard shall have no deviations. Standard tables are indicated by "**(standard table)**" within the applicable content requirements. All other tables are considered non-standard tables. A list of standard tables is provided below.

a. Controls and Indicators (MIL-STD-40051-3)

b. Troubleshooting Symptom/System Index (MIL-STD-40051-4)

c. Flow Diagram References (MIL-STD-40051-4)

d. Symptom/Malfunction-Base Troubleshooting (MIL-STD-40051-4)

e. Operational Test-Base Troubleshooting (MIL-STD-40051-4)

f. Message Word Index (MIL-STD-40051-4)

g. Fault Report Index (MIL-STD-40051-4)

h. Operational Check Setup of a Test Module (MIL-STD-40051-4)

i. Preventive Maintenance Checks and Services (PMCS) (MIL-STD-40051-5)

j. Repair Parts List (MIL-STD-40051-6)

k. Special Tools List (MIL-STD-40051-6)

l. NSN Index (MIL-STD-40051-6)

m. Part Number Index (MIL-STD-40051-6)

n. Reference Designator Index (MIL-STD-40051-6)

o. Maintenance Allocation Chart (MAC) (MIL-STD-40051-7)

p. Aviation Maintenance Allocation Chart (AMAC) (MIL-STD-40051-7)

q. Tools and Test Equipment Requirements for MAC/AMAC (MIL-STD-40051-7)

r. Expendable and Durable Items List (MIL-STD-40051-7)

s. Mandatory Replacement Parts List (MIL-STD-40051-7)

t. Index of Manufactured Items (MIL-STD-40051-7)

u. Component of End Items (COEI) List (MIL-STD-40051-7)

v. Basic Issue Items (BII) List (MIL-STD-40051-7)

w. Additional Authorization List (AAL) (MIL-STD-40051-7)

x. Tools Identification List (MIL-STD-40051-7)

5.3.11.3.1 Graphics in tables. Graphics may be placed in tables. Graphics may be placed within a column or may span one or more columns.

5.3.11.4 Table footnotes.

a. For numbering footnotes to tables, consecutive superior numbers beginning with 1 shall be used (unless numbers would cause confusion). (For example, footnote[1] , footnote[2] .) The numbering system shall be per table. Superior lower case letters, asterisks, or other designations may be used where numbers would cause confusion.

b. Footnotes to tables shall be placed below the closing line of the applicable table unless the table is continued. If a table is continued onto other pages, all footnotes shall be placed at the bottom of the page on which they are referenced.

5.3.12 Placement of text.

a. For 8-1/2 by 11 manuals, unless otherwise specified by the procuring activity, lines of text shall be in a single (page wide) column at the chapter and work package level. Text is single spaced (double spaced between procedural steps).

b. Procedural step text shall not be placed on an illustration.

c. Text shall always be positioned within the image area. Text shall not be wrapped around an illustration.

5.3.13 Placement of illustrations. Illustrations shall be placed as close to their reference in text as possible. Foldout illustrations shall not be included in work packages, but shall follow the last work package, the glossary, or the alphabetical index, whichever forms the last portion of the manual or volume.

5.3.13.1 Rotating illustrations. When necessary, illustrations may be placed sideways on a page (rotated 90 degrees counterclockwise).

5.3.14 Margin data. Margin data (usually headers and footers) shall be placed outside the area of the page used for either text, full-page tabular data, or full-page illustrations, but within the printing area dimensions of the page. (Refer to 5.3.14.1 and 5.3.14.2.) Complete headers and footers shall be prepared for all pages except covers and title block pages. (Refer to figure 2).

5.3.14.1 Headers. Headers shall consist of the TM number centered at the top of each page and other information as specified by the procuring activity. TM numbers for pocket TMs are required on front and back covers only. The work package sequence number shall be placed below the TM number on foldout pages. (Refer to figure 3.)

5.3.14.1.1 TM number and location. For all TMs, excluding pocket TMs, the TM number shall be centered at the top of each page and the top outer segment of each foldout page. If the manual is jointly used by two or more Services, only the contracting activity's TM number shall be placed on each page. (Refer to figure 2.)

5.3.14.2 Footers. Footers shall include the security classification markings (5.3.20), if any, the page numbers, (refer to figure 2) and other information as specified by the contracting activity (i.e., revision designator).

5.3.14.2.1 Page numbering. For all TMs page numbers shall be centered at the bottom of the page. Even numbers shall be assigned to left-hand pages and odd numbers to right-hand pages. For horizontal TMs, the upper pages shall have even numbers, and the lower pages shall have odd numbers. Page numbers shall be in

boldface type. (Refer to figure 2.) Page numbering for RPSTLs shall also be in accordance with this paragraph and paragraphs 5.3.14.2.1.1 through 5.3.14.2.1.3.

5.3.14.2.1.1 Front matter. Page numbering for front matter shall be as follows.

a. Front cover. Front covers shall be unnumbered.

b. Warning summary. The pages of the warning summary shall be numbered consecutively using lowercase letters (i.e., a, b, c, etc.).

c. List of effective pages/work packages. When a list of effective pages / work packages is prepared, it shall be numbered with upper case letters (i.e., A, B, etc.).

d. Revision transmittal page. The revision transmittal page shall be unnumbered.

e. Title block page, table of contents, and the How to Use This Manual section. These pages shall be numbered consecutively using lower case Roman numerals beginning with i (i.e., i, ii, iii, etc.).

5.3.14.2.1.2 Rear matter. DA Form 2028s, authentication pages, metric conversion charts (on the inside of the back cover), and back covers shall be unnumbered.

5.3.14.2.1.3 Blank pages. A blank page shall be assigned a number, but it shall appear on the preceding or following page. For example, if page 0001 00-10 of a work package is blank, page 0001 00-9 shall have the number 0001 00-9/10 blank; or if page 0001 00-9 of a work package is blank, page 0001 00-10 shall have the number 0001 00-9 blank/10.

5.3.15 Abbreviations and acronyms.

a. The first use of abbreviations and acronyms shall have the word(s) spelled out completely with the abbreviation or acronym in parentheses immediately after the word(s). Abbreviations and acronyms which are accepted as words (radar, sonar, laser, etc.) need not be spelled out.

b. Abbreviations and acronyms used shall be in accordance with MIL-STD-12, except that abbreviations may be plural (s) or possessive ('s). New abbreviations and acronyms shall not duplicate those presently listed in MIL-STD-12 where possible.

c. All nonstandard abbreviations and acronyms (excluding acronyms for Electrostatic Discharge (ESD) and Hardness-Critical Processes (HCP)) shall be defined in the "list of abbreviations/acronyms" paragraph of the general information work package. (Refer to MIL-STD-40051-2.)

d. Abbreviations and acronyms used in tables, but not found in the text or in any other portion of the TM, shall be spelled out in a footnote to the applicable table. Abbreviations and acronyms used in illustrations or figures, but not found in the text or in any other portion of the TM, shall be spelled out in a note to the applicable illustration or figure.

e. When abbreviations or acronyms are used as markings on the equipment (placarding), the same abbreviations or acronyms shall be used in the TM.

5.3.16 Symbols.

5.3.16.1 General information for symbols. All nonstandard symbols (excluding icons) shall be defined in the "list of abbreviations/acronyms" paragraph of the general information work package. (Refer to MIL-STD-40051-2.) New symbols shall not duplicate those presently listed in MIL-STD-12 where possible.

5.3.16.2 Metric symbols. Metric symbols shall be in accordance with ASTM E380A-91 and IEEE 945-84.

5.3.17 Nuclear hardness (hardness-critical processes) marking. All Hardness-Critical Processes shall be marked with the acronym **HCP** as shown in subparagraph "b" below. The acronym shall be prepared in boldface type and in the same style and size as the adjacent text. The acronym shall not be shown with the titles in the table of contents. Use of the acronym is as follows.

a. When the entire task and all subordinate paragraphs and steps relate to establishing nuclear hardness, the acronym **HCP** shall precede the task title. (For example, **HCP DISASSEMBLY**.)

b. When the entire task and all subordinate paragraphs and steps do not contribute to establishing nuclear hardness, only those which do contribute shall be annotated with the acronym **HCP**. For example,

SERVICING

1. _____.

2. **HCP** _____.

c. Operating or maintenance actions which could degrade hardness, but which are not directly involved in establishing nuclear hardness, shall not be annotated with the acronym, but shall be preceded by a caution.

5.3.18 Electrostatic Discharge (ESD) sensitive marking.

a. All paragraphs addressing handling or maintenance which could damage ESD sensitive parts shall be identified by the acronym **ESD** as shown below. Preparation and use of the acronym shall be similar to the requirements of 5.3.17. For example,

REMOVAL

1. _____.

2. **ESD** _____.

b. Handling or maintenance actions which could damage ESD sensitive parts, but which are not directly related to handling or maintenance of ESD sensitive parts, shall not be annotated with the acronym ESD, but shall be preceded by a caution.

5.3.19 Quality Assurance (QA) symbol. Depot and aviation maintenance procedures which have a major quality assurance effect shall be identified by the acronym **QA** in boldface letters. Only procedures at the step level shall be labelled with **QA**. (For example, 1. **QA** _____.)

5.3.20 Security classification, emergency page and protective markings.

5.3.20.1 Security classification markings. When specified by the procuring activity, a classified TM shall be prepared. The security classification markings for classified TMs, titles of parts, chapters, work packages, appendixes, paragraphs, illustrations, tables, and their contents, shall be identified in accordance with DoD 5200.1-R and DoD 5220.22-M. Additional instructions applicable to security classification markings are described in paragraphs 5.3.20.2 through 5.3.20.4.

5.3.20.2 Overall security classification. The overall security classification assigned to a TM shall agree with the highest security classification assigned to any portion within, and shall be marked accordingly at the top and bottom of the front and back cover sheets. The security classification markings for pages, including those for unclassified pages, shall be bold and at the top and bottom center of each page. (Refer to figure 4.)

5.3.20.3 Security classification placement for foldouts. For foldouts, the security classification shall be in boldface type, placed 3/4 inch from the right-hand edge of the page, and repeated continuously to the left with four inches of space between each placement.

5.3.20.4 Blank page backing a classified page. Blank pages normally require no copy. However, if the reverse side of a blank page contains classified material, security markings for the blank page shall be bold and at the top and bottom center of the blank page. The blank page shall reflect the highest classification of the reverse side, and include the statement "This page is unclassified".

5.3.20.5 Emergency page markings. When specified by the contracting activity, emergency pages shall be prepared. Pages containing emergency information shall have a broken black border placed on the three unbound edges. The border, the black marking, and the space between markings shall each be 3/16 inch wide. The angle of markings shall be 45 degrees. (Refer to figure 5.)

5.3.20.6 Protective markings. When specified by the contracting activity, a FOR OFFICIAL USE ONLY protectively marked manual shall be prepared. In FOR OFFICIAL USE ONLY manuals, the protective marking shall be bold and at the bottom of each page.

5.3.20.7 COMSEC protective markings. Unless requirement is specifically excluded by the contracting activity, Army Communications Security (COMSEC) Equipment Manuals shall contain the protective marking "FOR OFFICIAL USE ONLY".

5.3.21 Referencing.

5.3.21.1 Other documents. Reference shall be made only to other documents available and authorized to the user. Reference shall be to the publication number and, when necessary, to the work package sequence number. References to pending publication actions shall not be made.

5.3.21.2 Government specifications and standards. Reference shall be made to the basic number for Government specifications and standards.

5.3.21.3 Within the TM. Reference made within the TM shall be to the necessary location data only. For example, if the entire chapter is applicable, only the chapter number shall be referenced; if the data needed is contained in another work package or within the same work package, reference shall be made to the work package sequence number, to maintenance task titles, to titled procedures, to steps, to titled figures, and to titled tables.

5.3.21.4 Repeating information. Repeating information shall be allowed to ensure the work package information is complete. Information, two pages or less, may be repeated; information more than two pages shall be referenced.

5.3.21.5 Equipment, components, and parts. Reference to parts of the equipment and to equipment components may be by nomenclature, model, type, reference designator, and figure and item number, as applicable. Reference shall be made only to models or types of equipment covered by the manual. To facilitate coverage of modified or additional models or types at a later date, references shall be held to a minimum.

5.3.21.6 National Stock Numbers (NSNs) and Part Numbers (P/Ns). Reference to NSNs shall be made only in tables, other tabular material, and lists. Reference to NSNs shall not be made on illustrations or in illustration legends. Reference to P/Ns shall not be made in the narrative portions of the TM, procedural steps, illustrations, or legends, except when essential for identification. Reference to P/Ns may be made in tables, other tabular material, and lists.

5.3.21.7 Equipment panel markings (placarding). Reference shall be made to panel markings and switch positions exactly as marked on the equipment. However, symbols on panel markings shall be spelled out when they cannot be produced by the software, composing equipment, or printers used in producing the manual, such as the symbol for ohm, infinity, etc.

5.3.21.8 Metric and U.S. standard measurements. Unless specified otherwise by the contracting activity, all measurements shall be expressed in both U.S. standard units (e.g., ounces, pounds, gallons, inches, feet, knots, miles, etc.) and metric units. U.S. standard measurements shall be followed by the metric conversion in parentheses unless the equipment, instrument, or tool, etc., is calibrated in metric units. In that case, metric units shall be first, followed by the U.S. standard units. (For example, "169.5 Nm (125 lb-ft)".)

5.3.21.9 Temperature. Reference shall be made to temperature readings as calibrated on the equipment. If other than Fahrenheit, the equivalent in Fahrenheit shall follow in parentheses. General temperature references, such as room temperature, shall be given in degrees Fahrenheit (for example, 78°F).

5.3.21.10 TM divisions. Reference shall be made to any major division of the manual. (For example, Volume 5, Chapter 6, Table of Contents, Glossary, Index, etc.) or by an abbreviation (WP, etc.).

5.3.21.11 Volumes. References to information in another volume within the TM shall include the volume number.

5.3.21.12 Work packages. References to work packages within the same TM shall be to the work package sequence number (i.e., WP 0125 00, etc.).

5.3.21.13 Maintenance tasks, procedures, and paragraphs. Reference to maintenance tasks, procedures, and paragraphs shall be by work package sequence number and reference to title, as necessary (i.e., WP 0025 00, Disassembly; WP 0012 00, Equipment Data).

5.3.21.14 Tables. Reference shall be made to tables by table number (for example, table 2) within a work package. Reference shall be made to tables in a different work package by work package sequence number and table number (for example, WP 0012 00, table 2). Reference shall be made only to tables within the same manual or another volume of the same manual.

5.3.21.15 Footnotes. Reference shall be made to footnotes when essential for reference, explanation, comments, or other information.

5.3.21.16 Figures and multisheet figures. Reference shall be made to figures within a work package by figure number (for example, figure 2) and the sheet number for multisheet illustrations, when applicable (for example, figure 17, sheet 1). Reference shall be made to figures in a different work package by work package sequence number and figure number (for example, WP 0012 00, figure 2). References shall be made only to figures within the same manual or another volume of the same manual.

5.3.21.17 Index numbers.

a. Reference shall be made to figure numbers first, followed by the index number; for example, (figure 6, 34). However when multiple references refer to the same figure, only the first reference shall indicate the figure number. When the index numbers continue on successive pages, the figure number shall be repeated with the first index number reference on each succeeding page. For example,

"1. Unscrew safety disc retainer (figure 2, 1) from valve body (2).

2. Remove safety disc (3) and safety disc washer (4) from valve body (2)."

b. When the index numbers continue in sequence for procedures requiring two or more pages, the figure number shall be repeated in the first reference on each succeeding page.

c. If two or more figures are involved in the same sequence (procedure or task), the figure with the greater number of items shall be cited as described above. When the reference changes, the new figure reference shall be cited and also have the index number follow the figure number, i.e., "(figure 5, 21)." In such cases, the paragraph lead-in shall contain a statement similar to the following:

"NOTE

Item numbers below refer to figure 4 unless otherwise indicated."

d. For illustrations which do not have figure numbers, reference shall be made to the index numbers only.

5.3.21.18 Items on diagrams. Reference shall be made to parts on diagrams by enough of their description or reference designator to identify the item (for example, resistor A6R11).

5.3.22 Equations. The use of equations shall be held to the minimum use required by the needs of the TM user.

NOTE

MATHPACK 911001 as included in MIL-PRF-28001 shall be used for preparing equations. The use of some equations may be limited by the Mathpack and the output system.

5.3.23 Graphics.

5.3.23.1 Graphic format. All graphics developed in accordance with this standard shall be delivered in one of the three graphic formats: MIL-PRF-28003, Computer Graphic Metafile (CGM); MIL-PRF-28002,

Continuous Acquisition and Life-cycle Support (CALS) Raster; or MIL-PRF-28000, Initial Graphics Exchange Specification (IGES).

a. The CGM file format is the preferred graphics file format.

b. All graphics files for a particular TM should be applied in the same graphics format if practical. Otherwise, files may be delivered in any combination of the allowable formats.

c. Appropriate header and identification information shall be included in each graphics file. Refer to the applicable specification for the specific requirements.

5.3.23.2 Types of graphics. The following types of graphics shall be used in the preparation of TMs.

a. Line drawings.

b. Photographs.

c. Engineering drawings.

d. Diagrams.

e. Charts and graphs.

5.3.23.2.1 Line drawings. Line drawings including exploded views, locator views, and detailed views shall be used to support the operational and maintenance procedures, and the RPSTLs.

a. When index numbers are used to locate and identify equipment components or parts, the index numbers shall be assigned sequentially (clockwise, disassembly, or in the order mentioned in text).

b. To assist the maintenance technician or operator in locating major components, controls and indicators, etc., locator views may be included. Refer to figure 6.

c. When the illustration does not adequately or clearly depict the subject matter or part(s), specific detailed views may be included to support the main illustration. Refer to figure 7.

5.3.23.2.2 Multiview and multisheet illustrations. Multiview and multisheet illustrations may be used to clarify, identify significant features, or further detail equipment assemblies, subassemblies, and detailed parts.

5.3.23.2.3 Photographs. When approved by the procuring activity, photographs may be used in lieu of line drawings. When approved for use by the procuring activity, prescreened photographs are acceptable as final reproducible copy provided they have been screened only once, and the screen on the final sized illustrations shall be as specified by the procuring activity. When prescreened photographs are used, they shall be clearly marked to indicate prescreening. As specified by the procuring activity, unscreened continuous tone photographs and/or original illustrations shall be supplied with final reproducible copy.

5.3.23.2.4 Engineering drawings. Unless specified otherwise by the contracting activity, engineering drawings shall not be used as illustrations. When used,

a. They shall be in accordance with MIL-STD-100, and MIL-T-31000 (required for new designs after 01 July 1990) and shall be modified, as necessary, to meet the content, style, arrangement, legibility, format, and production requirements described in this document and the contract.

b. All unnecessary data that would reduce the comprehension or clarity of the illustration shall be removed.

c. They must be reduced or redrawn to meet page size restrictions.

5.3.23.2.5 Diagrams.

5.3.23.2.5.1 Diagram specifications. Diagrams shall be prepared in accordance with the specifications listed below.

Subject	Equipment Covered	Specification
Abbreviations	All	MIL-STD-12
Drafting Practices	Mechanical, Electrical and Electronic	ANSI Y14.15-1966 (R1973)
Engineering Drawing Practices	All	MIL-STD-100, MIL-T-31000
Graphic Symbols	Electrical and Electronic	IEEE 315A-86, IEEE 280-85
	Mechanical	MIL-STD-17-1 and -2
	Digital (Logic)	IEEE 91-84
	Fluid Power	ANSI Y32.10
Reference Designators	Electrical and Electronic	IEEE 200-75
Unit Symbols	All	IEEE 260-78
Logic	All	IEEE 91-84

5.3.23.2.5.2 Types of diagrams. The following types of diagrams may be included in the TM.

a. Block diagrams.

b. Schematic diagrams.

c. Pictorial diagrams.

d. Cutaway diagrams.

e. Logic diagrams.

f. Wiring diagrams/wire lists.

g. Cable diagrams.

h. Piping diagrams.

i. Test setup diagrams.

5.3.23.2.6 Charts and graphs. Charts and graphs shall be prepared as illustrations. Instructions shall be provided for use and interpretation of complex graphs.

5.3.23.3 Graphic techniques. Graphic techniques provided in 5.3.23.3.1 through 5.3.23.6, shall be used for the preparation of U.S. Army TMs.

5.3.23.3.1 Illustration figure numbers. Figure numbers for illustrations contained in work packages shall be avoided whenever possible. However, figure numbers for Depot Maintenance Work Requirements (DMWRs), Repair Parts and Special Tool Lists (RPSTLs), and foldouts are required. Figure numbers shall be placed on the illustration and be an integral part of the illustration.

5.3.23.3.2 DMWR figure numbers. Figures shall be numbered consecutively within each work package starting with the Arabic numeral 1.

5.3.23.3.3 RPSTL figure numbering. Figures for RPSTL TMs shall be numbered sequentially within a RPSTL chapter (not within each work package), using Arabic numerals beginning with 1. Figures in RPSTL supporting information work packages shall also be numbered sequentially within a RPSTL chapter (not within each work package), using Arabic numerals beginning with 1.

5.3.23.3.4 Foldout figure numbering. The figure numbers for foldouts shall be in accordance with 5.3.23.3.1 and shall be placed preceding the figure title under the illustration. (Refer to figure 3.)

5.3.23.3.5 Multisheet numbering. Multisheet figures shall be consecutively sheet numbered following the title; for example, "Figure 2. Wing Hydraulic Assembly (Sheet 1)." or "Figure 1. Cable Assembly W12 Wiring Diagram (Sheet 1)." Remaining sheets shall be numbered in consecutive order, Sheet 2, Sheet 3, etc.

5.3.23.3.6 Illustration figure titles. When illustration figure numbers are used, a figure title is required. The title shall describe the subject or content of the figure, and follow the figure number; for example, “Figure 2. Cannon Assembly.” Figure titles shall be centered below the illustration.

5.3.23.3.7 Illustration legends. When text legends are prepared to identify index numbers on illustrations, the legend shall become part of the illustration and not be placed with the text of the TM or work package.

5.3.23.3.8 Illustration identification numbers. Each illustration shall be assigned a unique identification number provided by the proponent activity.

a. Contractor's identification number may be used when approved by the proponent activity.

b. When the identification number is to be printed in the TM, such number shall be approximately 4- to 6- point type and placed in the lower right-hand corner of the illustration (within the graphics area) sufficiently removed to avoid being confused as part of the illustration.

5.3.23.4 Illustration consistency. A standard referencing system for associated text, signal flow and equipment nomenclature shall be used between illustrations and text.

a. Standard graphic symbols shall be used when possible.

b. If special graphic symbols are required, they shall be made visually distinctive from other graphic symbols used and included in a special symbols chart.

c. Official nomenclature shall be used for hardware, controls, indicators, switches, etc.; consistent, standard nomenclature shall be used for functions, signals, etc.

5.3.23.4.1 Portraying signal flow. Signal flow, especially for electrical and electronic equipment, critically affects the understandability of diagrams. To assist the TM user in following the diagram, where possible, major signal or pressure flow shall be from left to right, and feedback or return flow shall be from right to left.

5.3.23.5 Color in illustrations. Unless specified otherwise by the contracting activity, black and shades of black (one color) shall be used for TMs. Prior approval for color will be obtained by the contracting activity from the U.S. Army Publications and Printing Command (USAPPC). The contracting activity will provide written approval, designating color(s) to be used.

a. When color (other than black) is required, it shall be held to the minimum absolutely necessary to highlight or clarify important information.

b. The number of colors shall be kept to a minimum by use of various techniques such as tints, patterns, cross-hatching, and dots.

c. Any number of shades of a primary color used shall be considered as one color (e.g., a two-color printing could consist of black and three shades of red).

d. When color is approved/specified, the primary colors of red and blue shall be used first.

e. Yellow shall not be used alone.

5.3.23.6 Hazard icons. Standard icons may be used in warnings when applicable. Hazard icons may be used in technical manual warnings either singly or in combinations. The list of standard icons shall be provided by the procuring activity.

5.4 Copyrights, proprietary names, and advertising.

5.4.1 Copyright/copyright credit line. TMs shall not contain copyrighted material except as specified in the Federal Acquisition Regulations (FAR) and Defense Federal Acquisition Regulation (DFAR) Supplement. When copyrighted material is to be included in a TM, the preparer shall obtain prior written permission from the copyright owner or authorized agent for its use. The signed, written permission shall be delivered with the FRC when it is delivered. The written permission shall contain a statement declaring whether or not a copyright credit line is required.

5.4.2 Proprietary names. Trade names, copyrighted names, or other proprietary names applying exclusively to the product of one company shall not be used unless the items cannot be adequately described because of the technical involvement, construction, or composition. In such instances, one, and if possible, several

commercial products shall be listed, followed by the words "or equal." The same shall apply to manufacturers' part numbers or drawing numbers for minor parts where it is impractical to specify the exact requirements. Insofar as practical, the particular characteristics required for the "or equal" products shall be defined.

5.4.3 Advertising. Publication material prepared in accordance with this standard shall contain no advertising matter (other than that allowed in 5.4.2).

5.5 Clarity. TMs shall be written for the target audience. Reading grade level shall be as specified by the procuring activity.

5.6 Nomenclature.

5.6.1 Nomenclature consistency and applicability. Nomenclature, other terms, and names shall be consistent within a manual and throughout the RPSTL, MAC, and other directly related manuals. Statements that explain applicability for individual items of equipment shall use specific serial numbers, block designations, model designations, or similar identification. Such terms as "on later equipment" and "on early serial numbers" shall not be used.

5.6.2 Official/approved nomenclature. Unless specified otherwise by the procuring activity, only approved names and official nomenclature shall be used. (Official nomenclature shall be the nomenclature used in the RPSTL.) If unofficial nomenclature (common name) is approved, an appropriate nomenclature cross-reference list shall be prepared for the TM. (Refer to MIL-STD-40051-2.) Shortened versions of the approved nomenclature are not considered deviations. Approved nomenclature shall be used wherever the use of a common name might be ambiguous.

5.6.3 Military terms. Military terms used shall be in accordance with Joint Pub 1-02, or any approved dictionary or glossary of Army military terms.

5.6.4 Automatic electronic test and checkout terminology. Terms used for automatic electronic test and checkout shall be in accordance with MIL-STD-1309.

5.7 Revisions. Revisions shall consist of a revision transmittal page and applicable revision pages or work packages. For the content and format of a revision transmittal page, refer to figure 8.

a. Each revision to a TM shall be numbered in sequence beginning with 1.

b. Front matter, work package, and rear matter revision pages shall conform to the style and format of the basic TM and shall incorporate all approved information.

5.7.1 Revised work packages. When updates to a work package are made the entire work package shall be revised and reissued.

5.7.2 Revised front and rear matter pages. When updates to the front and rear matter of a TM are required, only the effected pages shall be revised and reissued. Copy shall be prepared for both sides of the printed page on which an update is made, even when an update is made to one side only.

5.7.3 Revision symbols. Revision symbols shall be inserted to identify technical updates in text, illustrations and tables.

a. Updates to the text and tables shall be indicated by a vertical line (revision bar) opposite the updated, deleted, or added text (except as noted below). The revision bar shall be placed in the margin opposite the binding edge. Exception: Pages with emergency markings (black diagonal lines around three edges) shall have the revision bars placed along the inner margins.

b. When tables are updated or added, the revision bar shall also be placed to the left of the table number and title.

c. The method(s) used shall be explained in the revision transmittal page.

d. Revision symbols from a previous revision shall be deleted when a page is subsequently updated. Symbols shall show current updates only.

e. If the composing equipment is incapable of producing a vertical line, another symbol may be used as specified by the contracting activity (for example, a number sign "#;" plus sign "+;" black circle; black square; the letters "C," "R," or "X").

f. Revision symbols are not required for the following.

(1) Indexes and tabular data where the update cannot be identified.

(2) Blank space resulting from the deletion of text, an illustration, part of an illustration, or a table.

(3) Correction of minor inaccuracies, such as spelling, punctuation, relocation of material, renumbering, etc., unless such correction changes the meaning of the information.

5.7.4 Revision symbols for illustrations. Unless specified otherwise by the procuring activity, a miniature pointing hand shall be used for illustrations (other than diagrams and schematics) to highlight the area containing the revised information. (Refer to figure 9).

a. Revisions confined to the same general area shall be indicated only once on the illustration.

b. A vertical line next to revised text and callouts on illustrations may be used in lieu of a pointing hand.

c. A vertical line next to revised material may be used on a chart or graph.

d. If a callout is deleted from an illustration, the word "DELETED" shall be placed after the appropriate number in the legend, if applicable. If a callout is deleted from an illustration without a legend, such as those used to supplement a RPSTL, the word "DELETED" shall be placed on the illustration at the end of the leader line. NOTE: Consideration should be given to showing the callout with a strikeout to indicate that it has been deleted.

e. When an illustration is revised, index numbers added between existing numbers shall be the same as the preceding index number with added alpha characters (e.g., 22A, 22B). This system shall also be used in basic manuals when errors are discovered so late in preparation that renumbering of all following index numbers would delay submittal. Index numbers with added alpha characters shall be eliminated for a revision.

f. As specified by the procuring activity, screens (shading), screened (shaded) boxes, or miniature pointing hands shall be used to highlight updated areas of diagrams and schematics. (Refer to figure 9.)

g. When a figure has a figure number and title, a vertical line shall be placed to the left of the figure number and/or title.

5.7.5 Revisions to RPSTL supporting information work packages and TMs. Requirements shall apply with the following exceptions.

a. Deleted figures and items. When figures and items have been deleted, the cross-reference indexes work packages shall be revised as necessary.

b. Item changes. Unless specified otherwise by the procuring activity, an asterisk shall be placed to the left of the item no. column in the list adjacent to the line item indicating that an update has been made to the item and is reflected in the associated text, illustration, P/N index, or reference designator index.

5.8 Technical manual assembly. Requirements for the preparation of front and rear matter necessary to supplement the technical content chapters and associated work packages are provided in 5.8.1 through 5.8.2.6. Appendix A, Technical Manual Content Selection Matrixes, of MIL-STD-40051 provides detailed assembly and content requirements for all TMs covering operation, maintenance and parts information, at all levels through depot.

5.8.1 Front matter **<frnt>**. As applicable, material preceding the first text page shall consist of the following in the order specified below.

a. Front cover.

b. Warning summary.

c. List of effective pages/work packages.

d. Revision transmittal page.

e. Title block page.

f. Table of contents.

g. "How To Use This Manual" information.

5.8.1.1 Front cover **<frntcover>**. A front cover shall be prepared for each TM and DMWR. The format of the TM front cover is shown in figure 10. The format of the DMWR front cover is shown in figure 11. The front cover shall contain the following content information.

a. Security classification (when required).

b. TM number **<tminfono>**.

c. TM title **<prtitle>**.

d. National stock number (NSN) **<nsn>** for item(s) covered.

e. End Item Code (EIC) **<eic>**, as specified in the Army Master Data File (AMDF).

f. Subtitle when required **<stitle>**.

g. Equipment illustration when required **<graphic>**.

h. Availability statement (**depot only**) **<avail>**.

i. Supersedure notice for revisions only **<super>**.

j. Disclosure notice **<disclos>**.

k. Distribution statement **<dist>**.

l. Export control notice warning **<export>**.

m. Destruction notice **<destr>**.

n. Service nomenclature **<servnomen>**.

o. TM date.

p. Revision designator **<chgno>** and date **<chgdate>** for revisions only.

q. Reproduction notice (**depot only**).

r. Distribution restriction (**depot only**).

Additional detailed requirements for the above front cover content information is described in 5.8.1.1.1 through 5.8.1.1.8.

5.8.1.1.1 TM number for joint service TMs. If the manual is jointly used, each Service's number shall be placed on the front cover and only the proponent activity's TM number shall be placed on each page within the TM. The numbers shall be prefixed with the word Air Force, Army, Marine Corps, or Navy (NAVSEA or NAVAIR), as applicable. The contracting activity's (proponent activity's) name **<servbranch>** and manual number **<tmno>** shall be placed first. The TM number(s) for the other Services shall be in alphabetical sequence following the contracting activity's name and manual number. For example,

"ARMY TM 11-1510-204-34
AIR FORCE TO 21M-LGM30G-12
MARINE CORPS TM 12345A-15/1
NAVY (NAVAIR) AI-F18AA-WRM-070
NAVY (NAVSEA) SE211-FA-MMA-010/SPS-10A"

5.8.1.1.2 Availability statement **(depot only) <avail>**. For DMWRs only, the front cover shall contain the following availability statement: "This publication is not available through the AG publications centers. This publication is available through *(insert the name and address of the proponent activity*)."

5.8.1.1.3 Disclosure notice **<disclos>**. Unless specified otherwise by the contracting activity, the following disclosure notice shall be placed on the front cover of all classified and unclassified TMs, except those with distribution statement A: "This information is furnished upon the condition that it will not be released to another nation without the specific authority of the Department of the Army of the United States, that it will be used for military purposes only, that individual or corporate rights originating in the information, whether patented or not, will be respected, that the recipient will report promptly to the United States, any known or suspected compromise, and that the information will be provided substantially the same degree of security afforded it by the Department of Defense of the United States. Also, regardless of any other markings on the document, it will not be downgraded or declassified without written approval of the originating United States agency."

5.8.1.1.4 Distribution statement **<dist>**. All TMs shall have a distribution statement placed on the front cover for each manual or revision. (Refer to figure 10.) The appropriate distribution statement shall be provided by the contracting activity as selected from DOD 5230.24.

5.8.1.1.5 Destruction notice **<destr>**. All TMs marked with distribution statements "B", "C", "D", "E", "F", or "X" shall be marked with the destruction notice provided by the contracting activity from DoD 5230.24. (Refer to figure 10.)

5.8.1.1.6 TM date. TMs shall be dated. The TM date shall be the date at which the last material to be included was received (copy freeze date, provided by the contracting activity). The day, month, and year shall be given in that sequence (for example, 10 JULY 1988). (Refer to figure 10.)

5.8.1.1.7 Revision designator and date **<chgno>** **<chgdate>**. When updates are prepared, the revision designator and date shall be shown on the front cover (refer to figure 10), the title block page, and the revision sheet. Unless specified otherwise by the contracting activity, the revision date shall be the date at which the material to be included was received (copy freeze date, provided by the contracting activity).

5.8.1.1.8 For Army COMSEC manuals use. Unless specified otherwise by the contracting activity, classified TMs shall contain the notice FOR OFFICIAL USE ONLY. It shall be placed above the security classification at the bottom center of the front cover and all TM pages.

5.8.1.2 Warning summary (including first aid data) **<warnsum>**. A warning summary shall be prepared for all TMs containing warnings and cautions. The content and format of the warning summary is shown in figure 12. The warning summary shall appear on the first right-hand page immediately after the front cover. The warning summary shall include each general type of warning and warning symbol **<warninfo>** and hazardous materials warnings **<hazmat>**.

5.8.1.2.1 Preventive maintenance services manual warning summary **(aviation only)**. For preventive maintenance services only, the following statement shall be placed on the front page.

"**WARNING**

Certain inspections are Mandatory Safety-of-Flight requirements, and the inspection intervals cannot be exceeded. In the event these inspections cannot be accomplished at the specified interval, the aircraft condition status symbol will be changed to a red X. Mandatory Safety-of-Flight inspection items are printed in bold face type.

NOTE

Inspection items contained in this manual are considered the minimum requirements for performing phased maintenance and must be performed. The cumulative effects of inspection deferrals are unknown and could result in catastrophic failure or increased maintenance at a later date. Therefore, the use of special lettering to emphasize Mandatory Safety-of-Flight Items is not to be construed as authority for deferral of other inspections."

5.8.1.3 List of effective pages/work packages. When directed by the procuring activity, a list of effective pages/work packages shall be prepared in accordance with figure 13. The list of effective pages/work packages shall be prepared and transmitted with the basic version of the TM and each subsequent revision. It shall be located immediately following the warning summary.

5.8.1.4 Revision transmittal page **<chgsheet>**. A revision transmittal page shall be prepared and accompany each revision to a TM. The revision transmittal page shall not be page numbered and shall be located following the warning summary, or, the list of effective pages/work packages, if included. (Refer to figure 8).

5.8.1.5 Title block page **<titleblk>**. A title block page (refer to figure 14) shall be prepared and follow the list of effective pages/work packages, if any. The title block page shall include the reporting errors and recommended improvements statement **<reporting>**. For RPSTLs, the "current as of" date shall be inserted. When depot level repair parts are included in a lower level RPSTL, the following statement shall be added to the RPSTL title: "(Including Depot Maintenance Repair Parts)."

5.8.1.5.1 Reporting errors and recommending improvements statement **<reporting>**. A reporting errors and recommending improvements statement (refer to figure 14) shall appear below the prime title, NSN, EIC, and subtitle (if any) on the title block page. The mailing address, e-mail address and fax number of the responsible proponent shall be inserted in the statement.

a. Unclassified/standard TM. Except for classified TMs, oversize TMs, pocket size TMs, and TMs with less than eight pages, the following statement shall precede the table of contents title.

"**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual direct to: (*name and address of proponent*). You may also send in your recommended changes via electronic mail or by fax. Our fax number is (*insert DSN and commercial number of proponent*). Our e-mail address is (*insert address of proponent*). A reply will be furnished to you."

b. Pocket size TMs, oversize TMs, and TMs with less than eight pages. For pocket-size TMs, oversize TMs, and TMs with less than eight pages, the following statement shall precede the table of contents title.

"**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: *(name and address of proponent*). You may also send in your recommended changes via electronic mail or by fax. Our fax number is (*insert DSN and commercial number of proponent*). Our e-mail address is (*insert address of proponent*). A reply will be furnished to you."

c. Classified TMs. For classified TMs, the following statement shall precede the table of contents title:

"**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve this manual, write and tell us about it. Address your correspondence to (*name and address of proponent*). When dealing with classified information, make sure that your correspondence is properly marked and is handled in accordance with current security regulations."

5.8.1.6 Table of contents <**contents**>. A table of contents listing chapters and work packages in the same order and with the exact titles as used in the body text shall be prepared for all TMs. The content and format of the table of contents is shown in figure 15. When space permits, the table of contents shall begin on the title block page (5.8.1.5) below the reporting of errors and recommending improvements statement. If space does not permit, the table of contents shall begin on a right-hand page following the title block page.

a. The security classification, if any, of chapters and work packages shall be indicated.

b. Each volume of a multivolume manual shall contain its own table of contents and shall reference companion volumes for the same TM. Volume 1 shall contain a complete table of contents covering the entire set. Entries shall indicate the volume in which the referenced material appears for example, Operator Instructions, Vol 1.

c. The following requirements are applicable to a RPSTL table of contents.

(1) Titles of RPSTL work packages, including the Functional Group Codes (FGCs) as applicable, shall be listed by the same nomenclature and in the same sequence in which they appear in the tabular listings. The WP sequence number shall be referenced with each WP title. (Refer to figure 16.)

(2) NSN, P/N and (as applicable) reference designator cross-reference indexes shall be listed.

(3) Only the work packages applicable to the maintenance level(s) for which the RPSTL is prepared shall be listed.

(4) The table of contents shall begin on a separate, right-hand page.

5.8.1.7 "How To Use This Manual" information <**howtouse**>.

a. "How to Use This Manual" information shall be located after the table of contents and before the first chapter of the TM. "How to Use This Manual" information shall begin on a separate, right-hand page.

b. Information to familiarize the user with special or unusual features of the TM shall be prepared. Coverage shall lead the user through the TM and explain important features of the organization and content. For example, the format is explained; operating, troubleshooting, Preventive Maintenance Checks and Services (PMCS) are explained; and repair, maintenance instructions, and other pertinent information are explained.

c. Any peculiarities in the basic arrangement of the TM shall be described. "How To Use This Manual" information shall not repeat instructions given within the chapters and/or work packages.

d. For all TMs (excluding operators) the "How To Use This Manual" information shall include reference to the associated RPSTL and an explanation on how to use the RPSTL in conjunction with the manual.

e. For all TMs with a glossary, reference to the glossary shall be made and an explanation of its features and use shall be provided.

5.8.1.7.1 International standardization agreements. When specified by the procuring activity, the "How To Use This Manual" shall contain the following.

"NOTE

Certain provisions of this technical manual (*identify by chapter, work package, paragraph, or similar manner, if appropriate*) are the subject of international standardization agreement (*insert the ABCA or ASCC standard number; the NATO, STANAG, NETR, or NEPR number; or appropriate documentary reference*). When revision or cancellation of this technical manual is proposed which will modify the international agreement concerned, the technical manual management activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations."

5.8.2 Rear matter <**rear**>. As applicable, material following the last text page shall consist of the following: glossary <**glossary**>, alphabetical index <**aindx**>, foldout pages <**foldsect**>, reporting errors and recommending improvements DA Forms 2028 <**da2028**>, the authentication page <**authent**>, and back cover <**back**>. For RPSTLs, the glossary and alphabetical index is not required.

5.8.2.1 Glossary <**glossary**>. A glossary shall be prepared for TMs only when the terms are uncommon and are not adequately defined in the text or in the Army, DoD, or standard dictionary. The glossary shall include a list of terms <**term**> followed by definitions <**def**>. The terms shall be listed in alphabetical order. If a glossary is required, it shall begin on a separate, right-hand page and immediately precede the alphabetical index, if any. (Refer to figure 17.)

5.8.2.2 Alphabetical index <**aindx**>.

a. An alphabetical index shall be prepared unless specified otherwise by the procuring activity. The index may be an index of work packages only or it may be a detailed index, as applicable.

b. Detailed indexes shall include entries for every subject which may be useful to the user. "See" and "See also" references may be included to guide the user to other entries.

c. All applicable work package references for each entry shall be indicated, regardless of the type of index being prepared. Page references may be included in a detailed index.

d. The index shall be located at the end of the TM but shall precede the sample DA Form 2028. Indexes shall begin on a separate, right-hand page. (Refer to figure 18.)

5.8.2.3 Foldout pages <**foldsect**>. If foldout pages are approved by the procuring activity, such pages shall follow the last work package, the glossary, or the alphabetical index, whichever forms the last portion of the manual or volume.

5.8.2.4 Reporting errors and recommending improvements DA Form 2028 <**da2028**>. One filled-out sample copy of DA Form 2028, provided by the contracting activity, and three blank DA Forms 2028 with the TM number, date, and title shall be included at the back of every unclassified TM (except for oversize TMs, pocket-size TMs, and TMs with less than eight pages). The filled out sample shall include guidelines for completing the form.

5.8.2.5 Authentication page <**authent**>. The authentication page, provided by the contracting activity, shall be the last printed text page of the TM. (Refer to figure 19.)

5.8.2.6 Back cover <**back**>. The outside back cover shall be blank, except for pocket-size TMs and classified TMs. For pocket-size TMs, the outside back cover shall include the TM number. For classified TMs, security classification markings shall be included on the back cover. When applicable, a metric conversion table, covering applicable units included in the TM, shall be placed on the inside back cover. (Refer to figure 20 .)

6. **NOTES.**

The notes in section 6 of MIL-STD-40051 apply to this Part.

TM 9-2350-314-24

CHAPTER 6

UNIT MAINTENANCE INSTRUCTIONS FOR 155 MM, M109A6 HOWITZER

FIGURE 1. Example of a chapter title page.

TM 11-6625-3178-14

RIFLE HOLDER ASSEMBLY REPLACEMENT ← *WORK PACKAGE TITLE* 0310 00

THIS WORK PACKAGE COVERS:
Removal, Installation

WORK PACKAGE SEQUENCE NUMBER

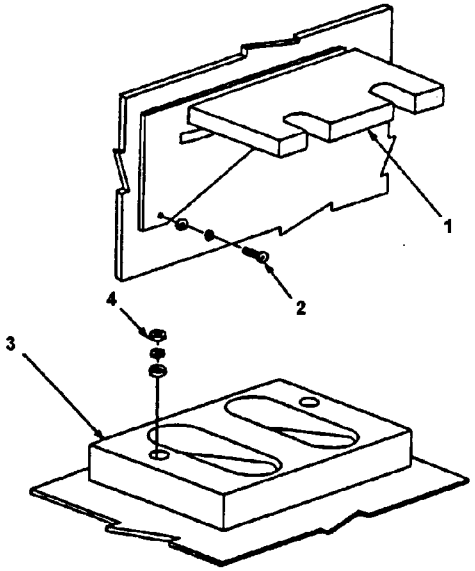
INITIAL SETUP:

Maintenance Level
Unit
Tools and Special Tools
Tool Kit, General Mechanics (Item 2, WP 1462 00)

Materials/Parts
Rifle Barrel Holder, 107236
Rifle Stock Holder, 107242

REMOVAL ← *MAINTENANCE TASK TITLE (PARAGRAPH TITLE)*

Rifle Barrel Holder Removal ← *PROCEDURAL STEP TITLE (SUBPARAGRAPH TITLE)*



PROCEDURAL STEP

1. On rifle barrel holder assembly (1), remove two screws, lock washers and flat washers (2) holding rifle barrel holder assembly to shelter wall and remove rifle barrel holder assembly.

Rifle Stock Holder Removal

1. On rifle stock holder assembly (3), remove two nuts, lock washers and flat washers (4) holding rifle holder assembly to shelter floor and remove rifle holder assembly.

0310 00-1 ← *WORK PACKAGE PAGE NUMBER*

FIGURE 2. Example of work package, paragraph, and procedural step titles and numbering.

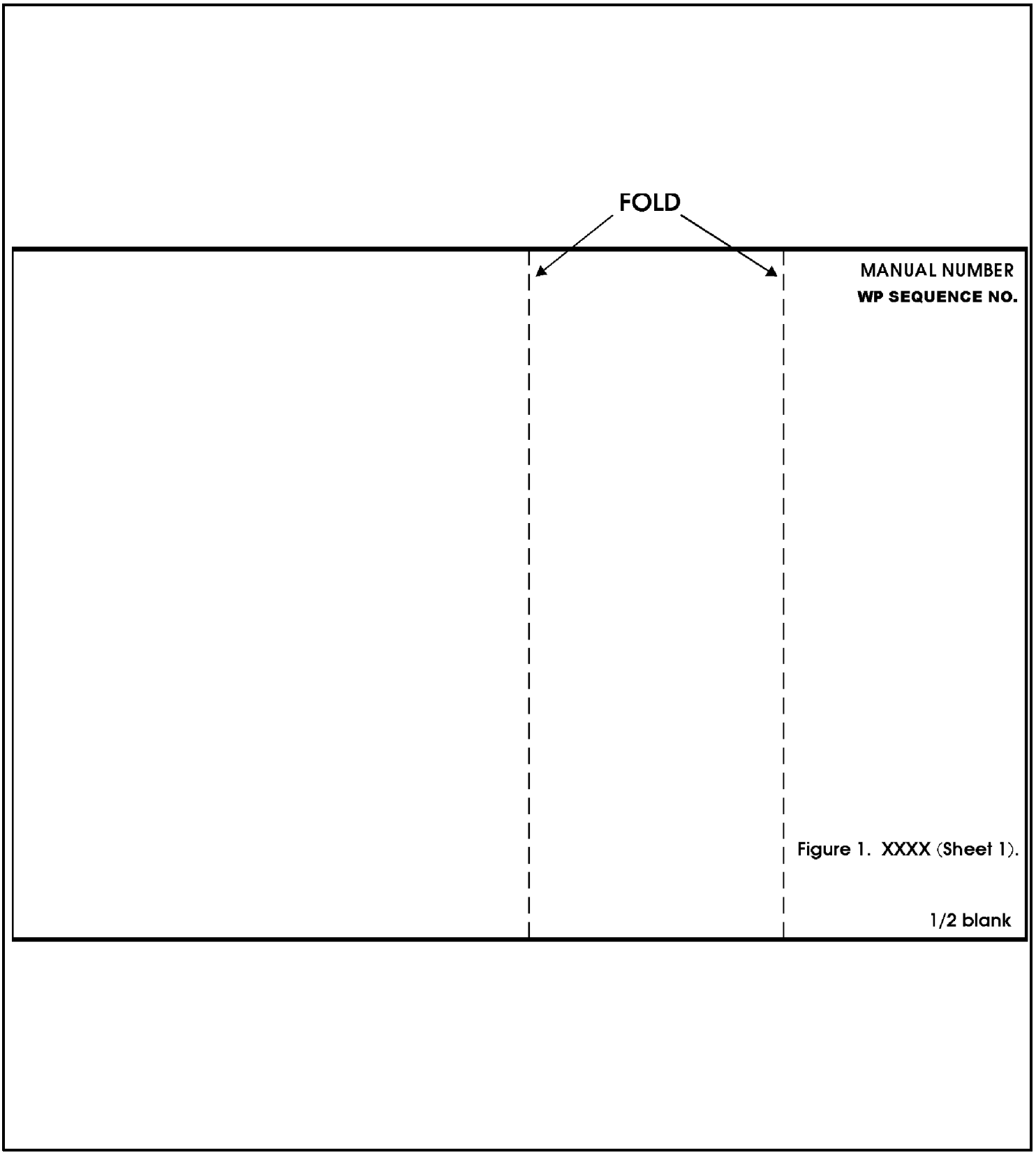


FIGURE 3. Example of a foldout page.

CONFIDENTIAL

TM 9-1025-211-10

M198 HOWITZER OPERATION UNDER USUAL CONDITIONS **0017 00**

GENERAL

The personnel of the howitzer section consist of the following:

1. A chief of section (CS) whose duties and responsibilities are the following:
   a. Training and efficiency of personnel.
   b. Performance of the section in training; firing, testing, and adjusting fire control equipment; and inspection and maintenance of all section equipment, including the prime mover.
   c. Observance of safety precautions.
   d. Preparation of field fortifications for protection of equipment, ammunition, and personnel.
   e. Camouflage discipline and local security, and radiological, biological, and chemical security discipline.
   f. Maintenance of forms in the equipment record folder.
   g. Policing the section area.
2. A gunner (G) who assists the chief of section in carrying out the duties specified in step 1. above. The gunner's specific duties are described in this manual.
3. An ammunition team chief (ATC) who leads and directs the handling of ammunition and assists the chief of section in the supervision of the howitzer section. The ATC also performs duties as listed in this manual and other duties as directed.
4. An assistant gunner (AG) who assists the gunner and, in an emergency, acts as the gunner. The assistant gunner's specific duties are described in this manual.
5. Five cannoneers, numbered 1 to 5, who perform duties as listed in this manual and other duties as directed.

0017 00-1

CONFIDENTIAL
(This page is UNCLASSIFIED)

FIGURE 4. Example of a page with security classification markings.

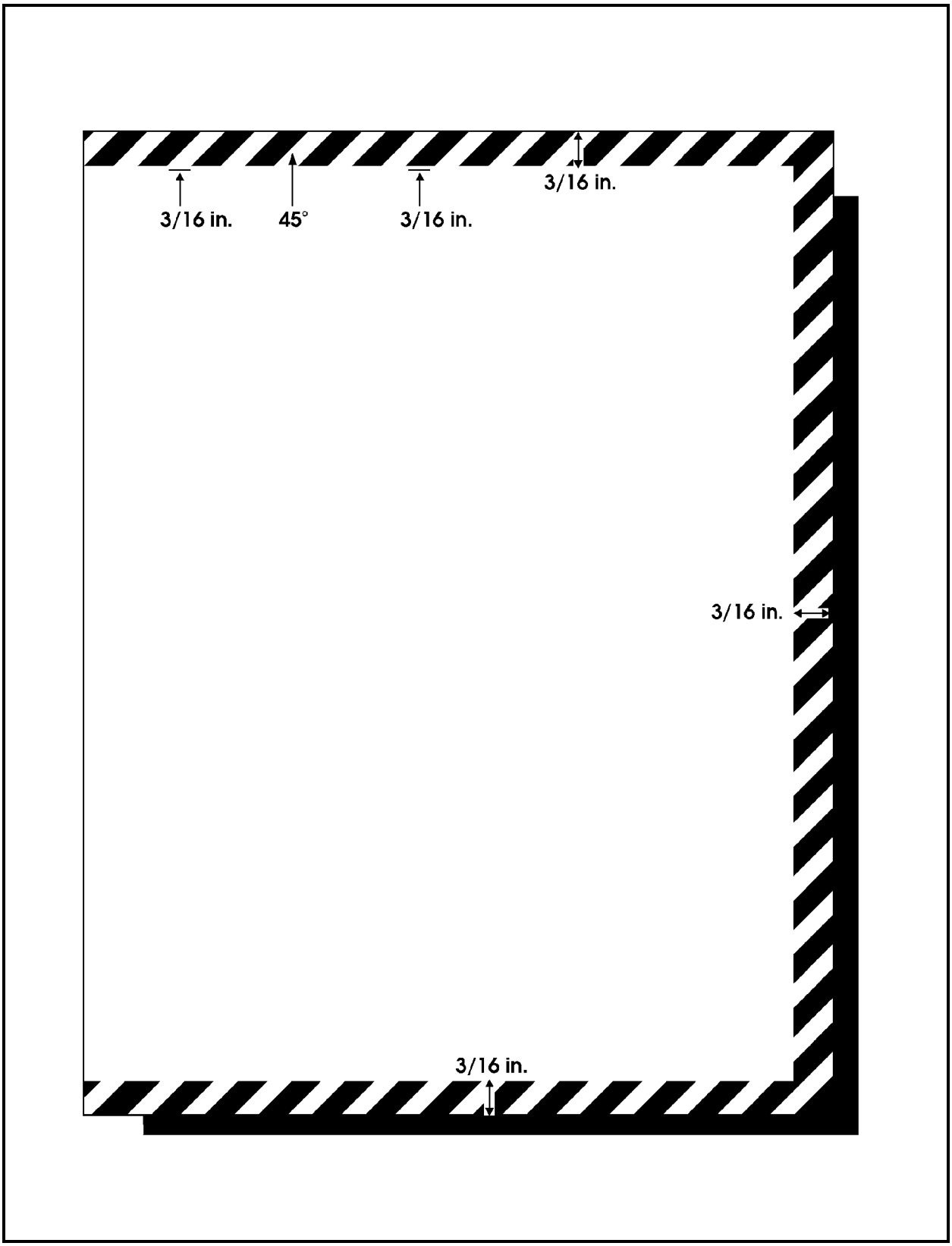


FIGURE 5. Example of emergency page markings.

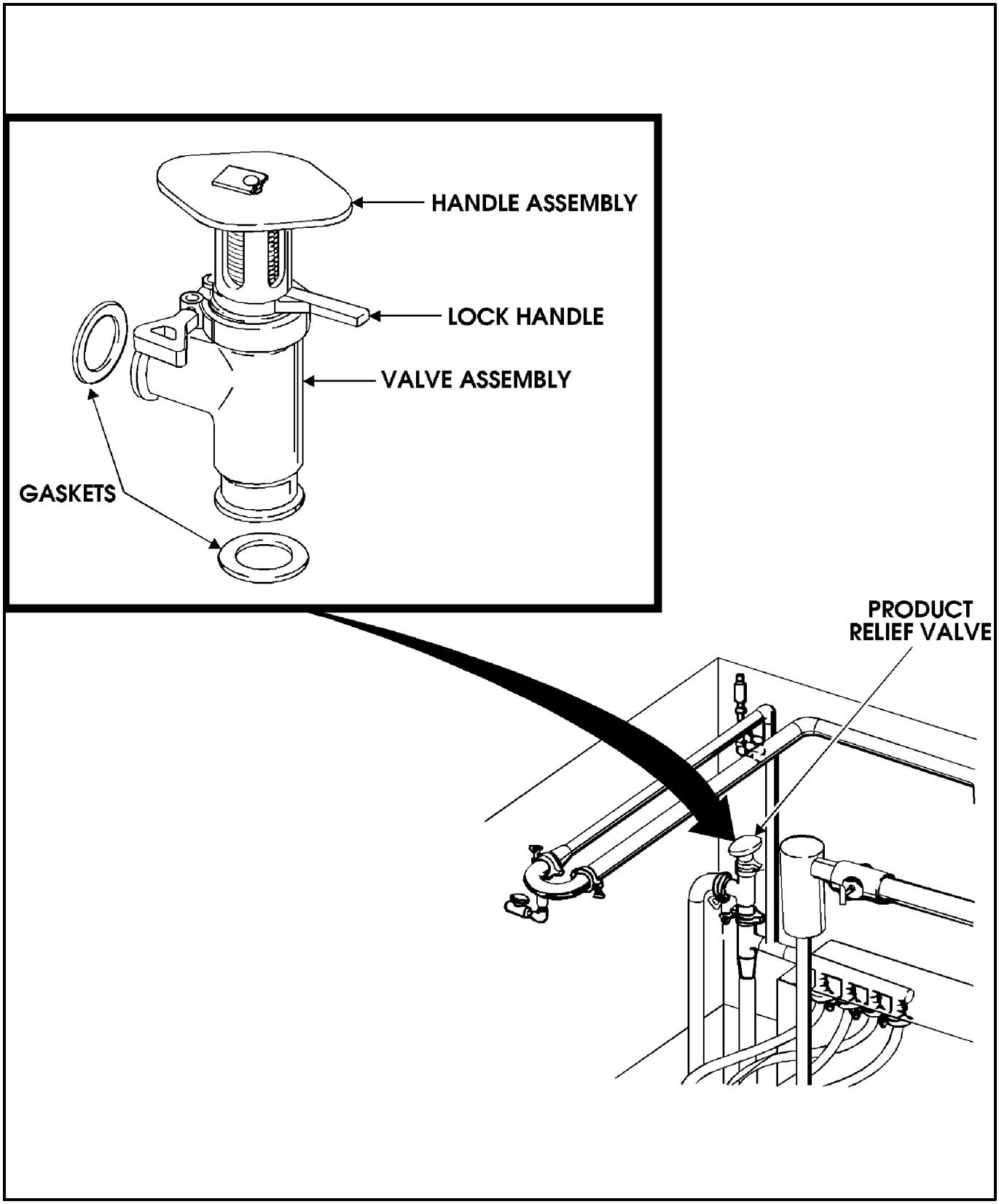


FIGURE 6. Example of a locator illustration.

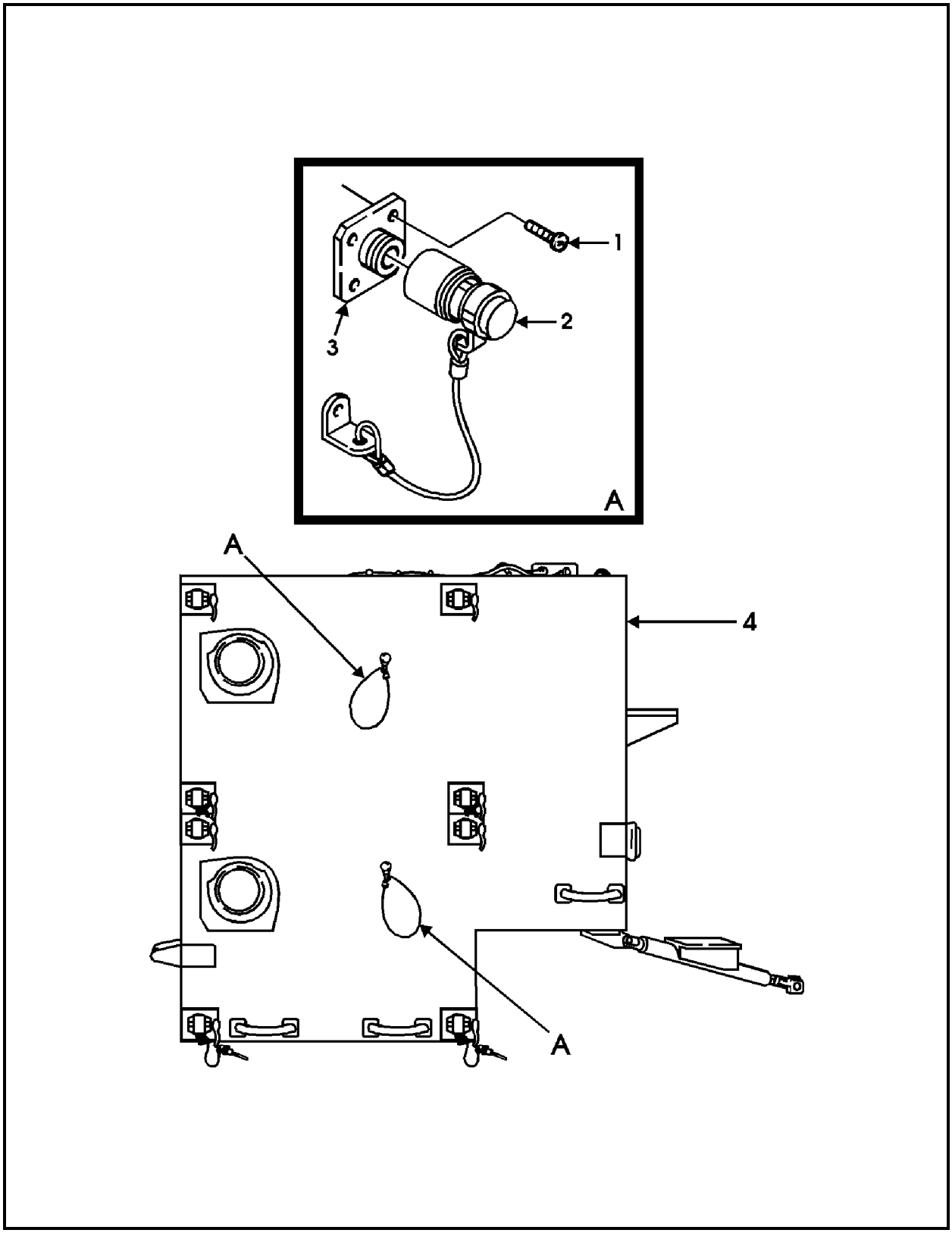


FIGURE 7. Example of a detail view illustration.

MANUAL NUMBER

REVISION NO. 1

HEADQUARTERS, DEPARTMENT OF THE ARMY
WASHINGTON, DC, 31 AUG 1993

TECHNICAL MANUAL

OPERATOR'S, UNIT, AND
DIRECT SUPPORT MAINTENANCE MANUAL
FOR

TEST SET
RADAR AN/TPM-22
NSN 4931-00-707-1229 (EIC D42)

DISTRIBUTION STATEMENT A - Approved for public release; distribution is unlimited.

TM X-XXX-XXXX-XX, 5 June 1987, is updated as follows:

1. File this sheet in front of the manual for reference.
2. This revision is a result of new preventive maintenance checks and services procedures and new expendable/durable supplies and materials.
3. New or updated text is indicated by a vertical bar in the outer margin of the page.
4. Added illustrations are indicated by a vertical bar adjacent to the figure number. Revised illustrations are indicated by a miniature pointing hand adjacent to the updated area and a vertical bar adjacent to the figure number.
5. Remove old pages and insert new pages as indicated below.

Remove Pages	Insert Pages
a through d	a through d
None	e through g / (h blank)

6. Replace the following work packages with their revised version.

Work Package Number
WP 0042 00
WP 0154 00

7. Add the following new work packages.

Work Package Number
WP 1625 01
WP 1700 01

FIGURE 8. Example of a revision transmittal page.

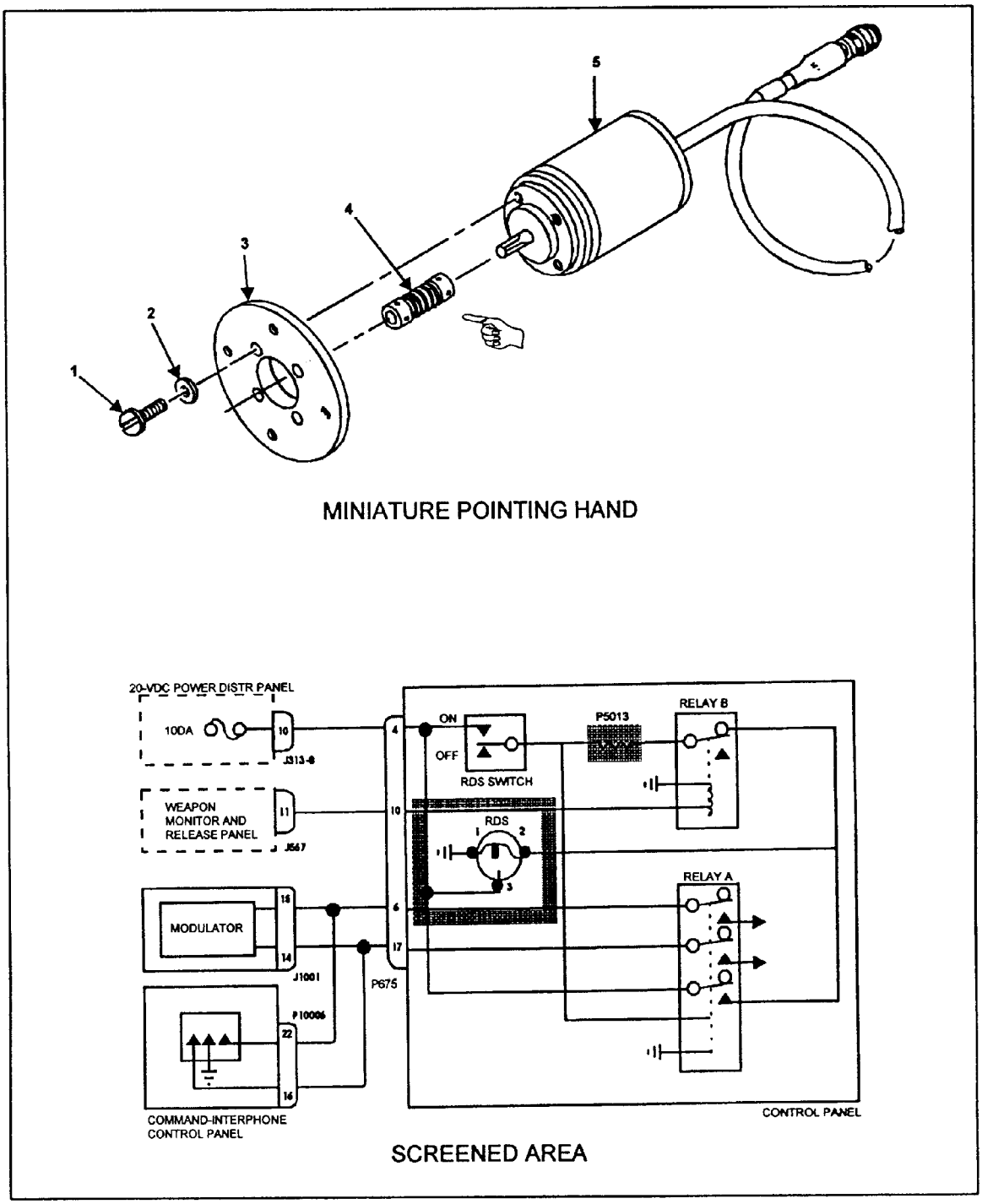


FIGURE 9. Example of revision symbols.

SECURITY CLASSIFICATION

TM NUMBER

TECHNICAL MANUAL

TYPE OF PUBLICATION
MAINTENANCE LEVELS FOR

NOMENCLATURE OF EQUIPMENT
TYPE, MODEL, PART NUMBER
NATIONAL STOCK NUMBER (EIC)
OR
SUBJECT

SUBTITLE

ILLUSTRATION

AVAILABILITY STATEMENT
SUPERSEDURE NOTICE
DISCLOSURE NOTICE
DISTRIBUTION STATEMENT
WARNING
DESTRUCTION NOTICE

SERVICE NOMENCLATURE

REVISION - DATE **TM DATE**

SECURITY CLASSIFICATION

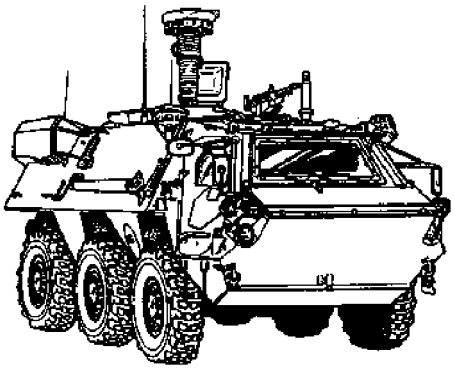
FIGURE 10. Example of a TM front cover.

TM 3-6665-339-10

TECHNICAL MANUAL

OPERATOR'S MANUAL FOR NUCLEAR-BIOLOGICAL-CHEMICAL RECONNAISSANCE SYSTEM (NBCRS) FOX M93A1

NSN 6665-01-372-1303 (EIC Y60)



DISTRIBUTION STATEMENT C - Distribution authorized to U.S. Government Agencies and their contractors. This publication is required for administrative and operational purposes, as determined on 22 October 1990. Other requests for this document must be referred to Commander, U.S. Army Chemical Research Development and Engineering Center, ATTN: SMCCR-MAT, Aberdeen Proving Ground, MD 21010-5423.

WARNING - This document contains export-controlled technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751 et seq) or Executive Order 12470. Violation of these export laws is subject to severe criminal penalties.

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 June 1996

FIGURE 10. Example of a TM front cover - Continued.

DMWR 11-5895-532-2

DEPOT MAINTENANCE WORK REQUIREMENT

FOR

INTERROGATOR SETS

AN/TPX-46(V)1 (NSN 5895-00-423-1693) (EIC: IZA)
AN/TPX-46(V)2 (NSN 5895-00-423-1694) (EIC: IZB)
AN/TPX-46(V)3 (NSN 5895-00-423-1696) (EIC: IZC)
AN/TPX-46(V)4 (NSN 5895-00-423-1700) (EIC: IZD)
AN/TPX-46(V)6 (NSN 5895-00-423-1702) (EIC: IZE)
AN/TPX-46A(V)1 (NSN 5895-01-162-5237) (EIC: N/A)
AN/TPX-46A(V)2 (NSN 5895-01-162-5239) (EIC: N/A)
AN/TPX-46A(V)3 (NSN 5895-01-163-3646) (EIC: N/A)
AN/TPX-46A(V)4 (NSN 5895-01-162-5240) (EIC: N/A)
AN/TPX-46A(V)6 (NSN 5895-01-163-1235) (EIC: N/A)

US ARMY COMMUNICATIONS-ELECTRONICS COMMAND, FORT MONMOUTH, NJ
15 MAY 1992

FIGURE 11. Example of a DMWR front cover.

TM 3-6665-339-10

WARNING SUMMARY

WARNING

RADIOACTIVE MATERIAL

RADIATION HAZARD

RULES AND REGULATIONS

Copies of the following rules and regulations are maintained at HQ, U.S. Army Armament and Chemical Acquisition and Logistics Activity (ACALA), Rock Island, IL 61299-7630. Copies may be requested, or information pertinent to these rules and regulations obtained, by contacting the ACALA Radiological Protection Officer (RPO), Defense Switched Network (DSN) 793-2965/2962/2995, Commercial (309) 782-2965/2962/ 2995. Depleted Uranium (DU) armor licensee is the U.S. Army Tank-Automotive Command (TACOM), Warren, MI 48397-5000. Radiation safety support may be obtained from the TACOM Safety Office at DSN 786-6121/8529 or Commercial (313) 574-6121/8529.

10CFR Part 19 - Notices, Instructions and Reports to Workers: Inspections.
10CFR Part 20 - Standards for Protection Against Radiation.
10CFR Part 21 - Reporting of Defects and Noncompliance.
NRC license, license conditions and license applications.

SAFETY PRECAUTIONS

Identification

Radioactive self-luminous sources are identified by means of radioactive warning labels. These labels should not be defaced or removed, and should be replaced immediately when necessary. Refer to the local RPO or the ACALA RPO for instructions on handling, storage, or disposal.

Storage

All radioactively illuminated instruments which are defective will be evacuated to a depot maintenance activity. These items must be placed in a plastic bag and packaged in the shipping container from which the replacement was taken before evacuation to a higher echelon is made. Spare equipment must be stored in the shipping container, as received, until installed on the weapon. Storage of these items is recommended to be in an outdoor shed-type storage or unoccupied building.

First Aid

For further information on first aid, see FM 21-11.

a

FIGURE 12. Example of a warning summary.

TM 3-6665-339-10

WARNING

HIGH VOLTAGE is used in the operation of this equipment.
DEATH ON CONTACT may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is at least one other person nearby who is familiar with the operation and hazards of the equipment. That person should also be competent in giving first aid. Ask maintenance personnel about extremely hazardous areas of the NBCRS vehicle prior to doing any maintenance.

Whenever possible, vehicle master power must be shut off before performing any maintenance. Use extreme caution around any electronic components of the NBCRS vehicle. Some components store energy that can injure personnel even with vehicle master power turned off.

Be careful not to contact high-voltage connections when removing, installing, or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce hazard of current flowing through vital organs of the body.

Do not be misled by the term low voltage. Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

b

FIGURE 12. Example of a warning summary - Continued.

TM 9-1440-433-24

INSERT LATEST UPDATED PAGES / WORK PACKAGES. DESTROY SUPERSEDED DATA.

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE: The portion of text affected by the updates is indicated by a vertical line in the outer margins of the page. Updates to illustrations are indicated by miniature pointing hands. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and updated pages / work packages are:

Original .. 0 .. 31 Mar 96

Revision .. 1 .. 30 Sep 96

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 47 AND TOTAL NUMBER OF WORK PACKAGES IS 380 CONSISTING OF THE FOLLOWING:

Page / WP No.	*Revision No.	Page / WP No.	*Revision No.	Page / WP No.	*Revision No.
Title	0				
A - B	1				
a - d	0				
i - iii	0				
iv - vi	1				
vii - x	1				
WP 0001 00 - 0081 00	0				
WP 0082 00	1				
WP 0083 00 - 0085 00	0				
WP 0086 00 - 0098 00	1				
WP 0099 00 - 0371 00	0				
WP 0372 00 - 0378 00	1				
WP 0379 00 - 0380 00	0				
Index-1 - Index-15	0				
Index-16 Blank	0				

* Zero in this column indicates an original page or work package.

Revision 1 A

FIGURE 13. Example of a list of effective pages/work packages.

TM 3-6665-339-10

TECHNICAL MANUAL

OPERATOR'S MANUAL

NUCLEAR-BIOLOGICAL-CHEMICAL
RECONNAISSANCE SYSTEM (NBCRS)
FOX M93E1
NSN 6665-01-372-1303 (EIC Y60)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual, direct to: Technical Director, Edgewood Research Development and Engineering Center, ATTN: SCBRD-ENL-V, Aberdeen Proving Ground, MD 21010-5423. You may also send in your recommended changes via electronic mail or by fax. Our fax number is (*insert DSN and commercial number of proponent).* Our e-mail address is (*insert address of proponent).* A reply will be furnished to you.

DISTRIBUTION STATEMENT C - Distribution authorized to U.S. Government Agencies and their contractors. This publication is required for administrative and operational purposes, as determined on 22 October 1990. Other requests for this document shall be referred to Technical Director, Edgewood Research Development and Engineering Center, ATTN: SCBRD-ENL-V, Aberdeen Proving Ground, MD 21010-5423.

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DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 JUNE 1996

FIGURE 14. Example of a title block page, and reporting of errors and recommending improvements statement.

TM 3-6665-339-10

TABLE OF CONTENTS

FIGURE 15. Example of table of contents.

TM 9-1007-215-24P

TABLE OF CONTENTS

ii

FIGURE 16. Example of a RPSTL table of contents.

GLOSSARY

Term	Definition
Arming Levers	Each lever arms one-half row of mines.
Canisters Remaining Panel	Tells user number of canisters in each launch rack.
Crossmember Assembly	Provides lateral support to female and male beam assemblies.
DCU Cable Tube Assembly	Provides support to which cabling may be tied.
DCU Card File Assembly	Houses all DCU CCAs.
DCU Chassis Assembly	Contains connectors and CCAs used in mine dispenser system.
DCU/Helicopter Interface Cable	Interface between DCU and helicopter controls.
DCU Information Panel	Contains indicators required to set up, launch, and provide readouts of Built In Testing (BIT).
DCU Pallet Assembly	DCU mount that rests on ground vehicle bed floor.
DIM Dial	Allows operator to brighten or dim readout displays on DCU.
Dispenser Control Unit (DCU)	Houses the electronics that control the mine dispensing system and a control panel for operating the system.
Display Cables	Input/output cables between Display Panel to CCAs.
Display Interface CCA	Manages inputs and outputs between CCAs and display board.
Driver CCA	Provides control over circuit functions of mine dispenser.
Driver Logic CCA	Contains logic circuitry required by Driver CCAs.
EMER JETTISON Toggle Switch	Backup jettison switch.
ESSS Porthole Grommet	Prevents chafing of jettison and launcher rack cable.

FIGURE 17. Example of a glossary.

TM X-XXXX-XXX-XX

INDEX

1

FIGURE 18. Example of an alphabetical index.

DMWR 9-1005-318-4

FOR THE COMMANDER:

LARRY D. BACHELOR
Colonel, GS
Chief of Staff

OFFICIAL:

R.D. HUSSON
Director of Maintenance

DISTRIBUTION:

COMMANDER RED RIVER ARMY DEPOT ATTN: SDSRR-ME TEXARKANA, TX 75507-5000		5 CYS
COMMANDER U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND		
ATTN:	AMSMC-MAE-WA	2 CYS
	AMSMC-MAW-AD	2 CYS
	AMSMC-QAW	2 CYS
	AMSMC-MAS-B	15 CYS
	AMSMC-MAF-AP	2 CYS
ROCK ISLAND, IL 61299-6000		
COMMANDER AMC LOGISTICS SUPPORT ACTIVITY ATTN: AMXMD-MP REDSTONE ARSENAL, AL 35898-7466		2 CYS

FIGURE 19. Example of an authentication page.

METRIC CONVERSION CHART

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Centimeters	Cubic Inches	0.060
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

TEMPERATURE CONVERSIONS

5/9 (^{o}F-32) = ^{o}C
212^{o} Fahrenheit is equivalent to 100^{o} Celsius
90^{o} Fahrenheit is equivalent to 32.2^{o} Celsius
32^{o} Fahrenheit is equivalent to 0^{o} Celsius
9/5 C^{o} + 32 = F^{o}

FIGURE 20. Example of a metric conversion chart on inside of back cover.

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